

Amendments to the Claims

1. (Currently amended) A method of cleaning a processing chamber, comprising:

providing a processing chamber having a residue material over at least one internal chamber surface, the residue being formed over the at least one internal surface during one or more processing event conducted within the processing chamber selected from the group consisting of material deposition, etching, annealing, photolithography, ion implantation, and chemical mechanical polishing;

providing a supercritical fluid in the processing chamber, the supercritical fluid comprising at least one of C_3H_8 , N_2O , C_2H_6 , CH_4 , H_2O , Ar and NH_3 ; and

contacting the residue material with the supercritical fluid, the contacting removing at least some of the residue material from over the at least one internal chamber surface.

2. (Original) The method of claim 1 wherein the residue material comprises at least one member of the group consisting of, a hydrocarbon, aluminum oxide, copper, a copper-comprising material, TiN , Ta_2O_5 , barium strontium titanate (BST), lead zirconate titanate (PZT), strontium bismuth titanate (SBT), NH_4Cl , $TiCl_4$, hafnium oxide, zirconium oxide, a platinum/rhodium alloy, ruthenium, ruthenium oxide, WN_x , W, Pt, iridium, iridium oxide, HfN, Ta, TaN, aluminum nitride and Si_xN_y .

3. (Original) The method of claim 1 wherein the residue material comprises an organic material.

4. (Original) The method of claim 1 wherein the residue material comprises an inorganic material.

5. (Original) The method of claim 1 wherein the processing chamber is selected from the group consisting of a PVD chamber, a CVD chamber, an ALD chamber, a PECVD chamber, a pulsed-CVD chamber and a high density plasma chamber.

6. (Previously presented) The method of claim 1 wherein the at least one internal surface includes a surface comprised by a disperser, a chamber wall or a substrate holder.

7. (Original) The method of claim 1 wherein the providing the supercritical fluid comprises flowing a liquid into the processing chamber and generating the supercritical phase from the liquid within the processing chamber.

8. (Original) The method of claim 1 wherein the providing the supercritical fluid comprises flowing a gas into the chamber and generating the supercritical fluid from the gas within the processing chamber.

9. (Previously presented) The method of claim 1 wherein the providing the supercritical fluid comprises introducing the supercritical fluid into the processing chamber in supercritical phase.

10. (Currently amended) The method of claim 1 wherein the supercritical fluid further comprises ~~at least one of~~ CO₂, C₃H₈, N₂O, C₂H₆, CH₄, H₂O, Ar and NH₃.

11. (Original) The method of claim 1 wherein the supercritical fluid contains at least one of a co-solvent and a surfactant dispersed therein.

12. (Original) The method of claim 11 wherein the supercritical fluid has a polar co-solvent dispersed therein.

13. (Original) The method of claim 1 wherein the chamber is maintained at a pressure greater than or equal to the critical pressure of the supercritical fluid throughout the cleaning.

14. (Original) The method of claim 1 wherein the chamber is maintained at a temperature greater than or equal to the critical temperature of the supercritical fluid throughout the cleaning.

15. (Original) The method of claim 1 wherein the chamber is maintained at a temperature of at least about 31°C and a pressure of at least about 72.8 atm throughout the cleaning.

16. (Currently amended) A method of removing deposited material from internal surfaces of a processing system, comprising:

providing a processing deposition system comprising:

a deposition chamber;

a processing reagent inlet;

a cleaning agent inlet;

a cleaning agent source;

a cleaning agent recovery vessel; and

a return line to recycle the cleaning agent from the recovery vessel to the cleaning agent source;

providing a cleaning agent comprising carbon dioxide from the source into at least a portion of a deposition system, the carbon dioxide comprising a phase selected from the group consisting of liquid phase and a supercritical phase;

contacting the deposited material on an internal surface of the at least a portion of the deposition system with the cleaning agent, the contacting solubilizing at least a portion of the deposited material to form a solubilized fraction; and

removing the solubilized fraction from the at least a portion of the deposition system.

17. (Original) The method of claim 16 further comprising exposing the deposited material to a pre-treatment substance prior to the contacting, the pre-treatment substance comprising at least one of a solvent and a surfactant.

18. (Previously presented) The method of claim 16 wherein the deposition system comprises a trap and wherein the internal surface of the at least a portion of the deposition system contacted comprises an internal surface of the trap.

19. (Previously presented) The method of claim 16 wherein the deposition system comprises at least one line and wherein the internal surface comprises an internal surface of the at least one line.

20. (Previously presented) The method of claim 16 wherein the deposition system comprises a substrate holder utilized for deposition within the system, the method further comprising contacting deposited material on a surface of the substrate holder with the cleaning agent.

21. (Previously presented) The method of claim 16 wherein the deposition system comprises a disperser utilized during deposition within the deposition system, and wherein the internal surface comprises a surface of the disperser.

22. (Original) The method of claim 16 wherein the carbon dioxide is liquid phase carbon dioxide.

23. (Original) The method of claim 16 wherein the carbon dioxide is supercritical phase carbon dioxide.

Claims 24-36 (Canceled).